

**REMARKS**

Claims 1-4 and 6-8, all the claims pending in the application, are rejected. Claim 1 is amended. Claims 2 and 8 are cancelled.

***Claim Rejections - 35 USC § 112***

**Claims 1-4 and 6-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.** This rejection is traversed for at least the following reasons.

First, as to claim 2, the rejection is moot in view of the cancellation of the claim.

Second, as to the remaining claims, the Examiner asserts that the specification as originally filed lacks support for a glass substrate which "contains lithium ions and no tin" as recited in line 12 of claim 1. Specifically, the Examiner asserts that there is no support for the limitation which explicitly excludes tin from the substrate composition.

This limitation has been removed from the claim, thereby obviating the rejection.

***Claim Rejections - 35 USC § 102***

**Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Aratani (US 4,671,814).** This rejection is moot in view of the cancellation of the claim.

***Claim Rejections - 35 USC § 103***

**Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 6,119,483) in view of Aratani (US 4,671,814).** This rejection is moot in view of the cancellation of the claim.

***Patentability of Pending Claims***

In framing the rejection of claim 8, now cancelled, the Examiner looks to the combination of Takahashi and Aratani.

**Takahashi**

The Examiner notes that Takahashi teaches a method for processing a glass substrate for use as a magnetic disk, and asserts that all of the limitations of the claimed process are disclosed,

but admits that Takahashi is silent regarding the two stage treatment process. Specifically, the Examiner admits that "Takahashi teaches that the treatment process as indicated above proceeds by a single dip in a molten solution or mixture of potassium nitrate (60%) and sodium nitrate (40%), and concludes that "the disclosed immersion in a molten mixture or solution of the two alkali ions does not anticipate the claimed process indicating a first process step and a subsequent second step."

Aratani

The Examiner asserts that a two stage treatment would have been obvious over Takahashi in view of the Aratani disclosure because:

"Aratani teaches a method for strengthening a glass substrate having a thickness of about 1.0mm by chemical strengthening. As set forth in Example 1 (Column 8, Lines 39-53), the immediate reference teaches that,

The sample disks were immersed In a bath of molten sodium nitrate...The sample disks taken up from the bath were left to cool down and were washed with water to remove adherent sodium nitrate and dried.

After the above treatment with sodium nitrate, all the sample disks were immersed in a bath of molten potassium nitrate .. The samples taken up from the molten potassium were left to cool down, washed and dried."

In the Response to Arguments portion of the Office Action, the Examiner acknowledges Applicant's argument that the Aratani glass develops a tin containing surface layer because it is manufactured by the float glass process. The Examiner further states "the Aratani process utilizes substantially the same materials as Applicants disclosed invention in a substantially identical process," thereby causing the Aratani two step process to first "produce compression stress on a surface of the glass substrate and to produce tensile stress in a depth of the glass substrate" and second to "increase the compression stress of the surface of the glass substrate and to reduce the tensile stress of the depth of the glass substrate" as claimed. The Examiner concludes that the float glass process of Aratani would lead one skilled in the art to modify the one step process in Takahashi in order to minimize the degree and severity of warping in a planar float glass substrate incurred during the chemically strengthening process.

### Amended Claim 1

The feature of the present invention as recited in amended claim 1 is focused on (1) the manufacture of a glass substrate for a magnetic disk wherein (2) the chemical strengthening is provided in a two step process with specific chemical content, resulting in a specific physical characteristic.

#### Two Process Stages - Separate Performance Results

At a first-stage process, the chemically strengthening the glass substrate is performed by the use of only sodium nitrate so as to produce compression stress on a surface of the glass substrate and to produce tensile stress in a depth of the glass substrate.

At a second-stage process, the chemically strengthening the glass substrate is performed by the use of potassium nitrate so as to increase the compression stress of the surface of the glass substrate and to reduce the tensile stress of the depth of the glass substrate.

By such a specific two-stage process, it is possible to manufacture the glass substrate for the magnetic disk, which is high in transverse strength and is prevented from damage or breakage with time.

#### Difference From Prior Art

The presently claimed process states significant differences with regard to Aratani and Takahashi, taken alone or in combination.

In Aratani, the first stage (using sodium ions) is carried out in order to improve the warp of the glass substrate, *not* to chemically strengthen the glass substrate. The chemically strengthening is carried out only at the second stage (using potassium ions) in Aratani. Thus, Aratani is silent with the first stage of the chemically strengthening.

On the other hand, Takahashi discloses that the chemical strengthening is carried out using a *mixed molten salt containing sodium nitrate and potassium nitrate*.

#### Proposed Combination Does NOT Suggest Invention to One Skilled in the Art

The Examiner suggests applying the chemical strengthening of Takahashi into the first stage of Aratani. However, this will not result in the present invention. This is because the first

stage is performed using both sodium nitrate and potassium nitrate for chemical strengthening, according to the combination of Aratani and Takahashi.

By contrast, as mentioned above, according to the present invention, the chemically strengthening is performed by the use of only sodium nitrate at the first-stage while the chemically strengthening is performed by the use of potassium nitrate at the second stage. Thus, the basic concept of the present invention is adopting the two-stage process.

On the contrary, according to the combination of Aratani and Takahashi, in the first stage, both sodium nitrate and potassium nitrate are used. Consequently, the second stage (using potassium nitrate) is unnecessary in the combination of Aratani and Takahashi.

Accordingly, the combination of Aratani and Takahashi would not be looked to by one skilled in the art to derive the basic concept of the present invention adopting the two-stage process. Accordingly, as discussed above, the present invention is clearly patentable over the combination of Takahashi and Aratani.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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